

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 03-022569

(43)Date of publication of application : 30.01.1991

(51)Int.Cl.

H01L 29/804

(21)Application number : 01-155872

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(22)Date of filing : 20.06.1989

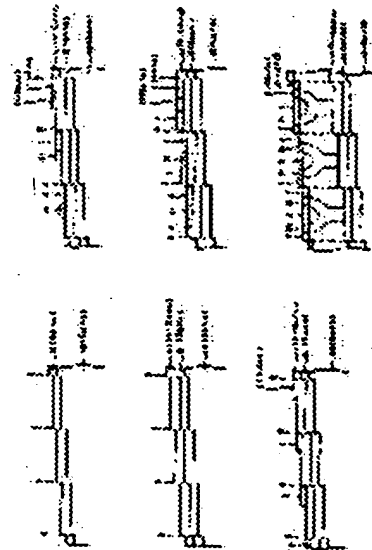
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## (54) MANUFACTURE OF QUANTUM INTERFERENCE TRANSISTOR

### (57)Abstract:

**PURPOSE:** To enhance a quantum interference transistor of this design in quantum interference effect by a method wherein an off substrate whose surface deviates slightly from a (100) plane by an angle of a few degrees is used, and two kinds of semiconductors different from each other in width of forbidden band are grown atomic layer by atomic layer to form a modulation structure by the use of an atomic layer epitaxial method.

**CONSTITUTION:** By a molecular beam epitaxy method, Ga and As are made to alternately irradiate an off substrate 10 atomic layer by atomic layer to form a GaAs buffer layer 6. Then, and an N-type GaAs contact layer 41 is formed through the same method, and furthermore, and an N-type GaAs contact layer 41 is formed through the same method. Furthermore, only Al atoms are made to irradiate by  $3/8$  of an atomic layer and then As is made to irradiate as much as Al or more, whereby an AlAs stripe layer 2 which is in contact with a step 8 and whose width is  $3/8$  of a space between steps is formed. When Ga and As are made to irradiate by  $2/8$  of an atomic layer respectively and further more Al and As are made to irradiate by  $3/8$  of an atomic layer respectively the same as above, an AlAs stripe layer 2 is formed. The above process is repeated and Ga and Al are changed in irradiation dose, whereby a GaAs stripe layer 21 can be ramified into two paths.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]